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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/655,948	09/05/2003	Mohamad Nourmohamadian	ULTERA.008A	8896

28222 7590 11/03/2005
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EXAMINER

CAMPOS, YAIMA

ART UNIT PAPER NUMBER

2185

DATE MAILED: 11/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/655,948	Applicant(s) NOURMOHAMADIAN ET AL.	
	Examiner Yaima Campos	Art Unit 2185	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 and 15 is/are rejected.
- 7) ☒ Claim(s) 14 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 9/5/03 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>11/11/04, 12/23/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The instant application having Application No. 10/655,948 has a total of 15 claims pending in the application; there are 3 independent claims and 12 dependent claims, all of which are ready for examination by the examiner.

I. INFORMATION CONCERNING OATH/DECLARATION

Oath/Declaration

2. The applicant's oath/declaration has been reviewed by the examiner and is found to conform to the requirements prescribed in **37 C.F.R. 1.63**.

II. STATUS OF CLAIM FOR PRIORITY IN THE APPLICATION

As required by **M.P.E.P. 201.14(c)**, acknowledgement is made of applicant's claim for priority based on applications filed on 5/24/03 (Provisional 60473236) and 3/31/03 (Provisional 60459081).

III. INFORMATION CONCERNING DRAWINGS

Drawings

3. The applicant's drawings submitted are acceptable for examination purposes.

IV. ACKNOWLEDGEMENT OF REFERENCES CITED BY APPLICANT

4. As required by **M.P.E.P. 609(C)**, the applicant's submissions of the Information Disclosure Statements dated November 11, 2004 and December 23,

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2004 are acknowledged by the examiner and the cited references have been considered in the examination of the claims now pending. As required by **M.P.E.P 609 C(2)**, a copy of the PTOL-1449 initialed and dated by the examiner is attached to the instant office action.

V. OBJECTIONS TO THE SPECIFICATION

Claim Objections

5. **Claim 10** is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 10 appears to duplicate the contents of claim 9; the claim on which it depends.

Appropriate correction is required.

VI. REJECTIONS BASED ON PRIOR ART

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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7. **Claims 1-13 and 15** are rejected under 35 U.S.C. 102(b) as being anticipated by the United States Patent (US 5,455,926) by Keele et al.

8. As per **claim 1**, Keele discloses “a virtual tape stacker” as it is provided **[“an optical disk system and method for emulating a set of magnetic tape drives using virtual tape data stored on optical disks”](Column 17, lines 60-64)]** comprising:

“a server interface adapted to communicate with a server” **[Item 12; IBM Mainframe Computer (Figure 1) “MOST 10 provides a transparent interface between IBM System 370 compatible mainframes 12 and optical disks 10” (Column 22, lines 41-44)]**

“a data path adapted to communicate with a random access data storage device” **[Data path shown from port 17 Optical disk drive 16a (Figure 1)]**

“a controller configured to transfer data between said server interface and said data path” **[MOST Controller 14 (Figure 1)]**

“said controller operational so as to manage said data on said storage device as a plurality of sequentially-ordered virtual tape volumes ” **[Keele teaches that “each optical disk contains one or more virtual tapes” (Column 40, lines 5-6) and that this optical disk is made of sectors which “can be written and read sequentially from the start of the optical disk through the end.” (Column 40, lines 64-67)]**

“wherein a loaded one of said virtual tape volumes is unloaded and a next one of said virtual tape volumes is loaded in response to an eject command from said server ” **[With respect to this limitation, Keele teaches that “The jukebox is**

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designed to perform two robotically controlled operations concurrently.

That is, one drive can be unloaded at the same time the other drive is being loaded” (Column 36, lines 23-30) and that “Mount Messages sent by the attached host computer 12 to MOST 10 are automatically interpreted and acted” (Column 36, lines 31-32); further teaching that the jukebox “mounts or dismounts the disks 20 into the optical drives 16.” (Column 29, lines 52-50) and also explaining that “one key press” will “unload a virtual tape.” (Column 26, lines 55-57) (Figure 1)]

9. As per **claim 2**, Keele discloses “a virtual tape stacker wherein said controller comprises:” **[See claim 1 rejection above]**

“a volume management table having pointers to said volumes” [With respect to this limitation, Keele discloses that “the controller 14 stores tape maps of the virtual tapes mounted in each optical drive” and further explains that a tape map “pointer points to a respective tape map 348 of each virtual tape”(Column 44, lines 5-6)]

“and empty/full indicators corresponding to said volumes” [With respect to this limitation, Keele discloses an equivalent process so that when a disk is imported to the jukebox, “it is assigned to a free slot in the jukebox” and that “the disk directory is updated” to reflect the loading/unloading operations. It is also taught that “When a disk is exported form the jukebox, the disk directory entries are deleted and the previously assigned slot is designated as free” (Columns 39-40 lines 62-65 and 1-4) as a way of indicating empty/full status for virtual volumes.

“a virtual tape manager accessing said pointers to determine said next one and writing said indicators to designate said loaded one” **[With respect to this limitation, Keele teaches a tape directory which “points to a tape map for each virtual tape” (Column 40, line 38), that the MOST controller uses the system of pointers to “seek addresses on the optical disk” (Column 40, lines 45-46). Keele also discloses the “recording of updated tape directories for virtual tapes that were added, deleted or altered” (Column 20, lines 61-66) and further explains that “the tape map, stored for each virtual tape on the optical disk, is used to keep track of where on the disks 20 each record is stored.” (Column 41, lines 22-25) (Figure 1)]**

As per claim 3, Keele discloses “A virtual tape stacker” **[See rejection to claim 1 above]** “comprising:”

“a physical tape device” **[Jukebox (Figure 1) “The function of the jukebox is to store disks in physical slots” (Column 29, lines 48-50)]**

“a tape cartridge adapted to load into said tape device” **[Keele teaches this limitation as it is disclosed that the controller may have attached devices such as “3480 cartridge tape, 3420 reel tape, 2280 DASD” or other devices (Column 24, lines 13-15)]**

“a physical tape volume integrated into said sequentially-ordered virtual tape volumes” **[With respect to this limitation, Keele teaches that “the function of the jukebox is to store disks in physical slots until the disks are requested by the operator or host, and then to mount or dismount the disks into the optical drives;” it is also taught that “the controller assures that each**

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optical disk appears to the host as a collection of one or more virtual tapes.” (Column 29, lines 47-60) and that the optical disk is made of sectors which “can be written and read sequentially from the start of the optical disk through the end.” (Column 40, lines 64-67)]

“when said tape cartridge is write-protected and loaded into said tape device”

[Keele explains that the data is write-protected using a “media cartridge write protect switch, and by a virtual write protect indicator which can be recorded in each individual virtual tape” (Column 38, lines 18-23)]

10. As per **claim 4**, Keele discloses “a virtual tape stacker method” as **[With respect to this limitation, Keele teaches “an optical disk system and method for emulating a set of magnetic tape drives using virtual tape data stored on optical disks” (Column 17, lines 60-64)] “comprising the steps of:” “providing a plurality virtual tape volumes on a random access storage” [Keele discloses that “each optical disk contains one or more virtual tapes” (Column 40, lines 5-6)**

“each of said virtual tape volumes configured as sequential access data storage” **[Keele teaches that “each optical disk contains one or more virtual tapes” (Column 40, lines 5-6) and that this optical disk is made of sectors which “can be written and read sequentially from the start of the optical disk through the end.” (Column 40, lines 64-67)]**

“organizing said virtual tape volumes in a sequential order” **[With respect to this limitation, Keele discloses a “tape directory” which “points to tape maps” (Column 40, line 38) and that the “tape map, stored for each virtual tape on**

the optical disk is used to keep track of where on the disks 20 each record is stored” (Column 41, lines 22-25) (Figure 1) as a means of organizing the virtual tapes in sequential order.]

“ejecting a loaded one of said volumes and loading a next sequential one of said volumes according to said sequential order in response to said ejecting step”

[With respect to this limitation, Keele teaches that the function of the jukebox is “to mount or dismount the disks into the optical drives;” it is also taught that “each optical disk contains one or more virtual tapes” (Column 40, lines 5-6) and that the optical disk is made of sectors which “can be written and read sequentially from the start of the optical disk through the end.” (Column 40, lines 64-67)]

11. As per claim 5, Keele discloses a “virtual tape stacker method” **[See rejection to claim 4 above]**

“wherein said providing step comprises the substeps of:

creating a plurality of data management tables corresponding to said virtual tape volumes” **[With respect to this limitation, Keele teaches that each virtual tape has “associated with it a respective tape map” and that a “tape directory” has “pointers to the respective tape maps” (Columns 20-21, lines 67 and 1-5)]**

“storing a plurality of address ranges in said data management tables indicating the location of said virtual tape volumes on said random access storage” **[With respect to this limitation, Keele discloses that “the tape map pointers include sector addresses” on the optical disk (Column 40, lines 50-63)]**

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12. As per claim 6, Keele discloses a “virtual tape stacker method” [See rejection to claim 4 above]

“wherein said organizing step comprises the substeps of:

creating a volume management table corresponding to said random access storage” [With respect to this limitation, Keele discloses that the “tape map for each virtual tape” is stored “on the optical disk” (Column 41, lines 22-25)

“storing a plurality of pointers in said volume management table identifying the location of each of said data management tables” [This limitation is disclosed by Keele as it is taught that the “tape directory listing the virtual tapes has pointer to the respective tape maps. The tape maps keep track of the physical structure of the virtual tapes.” (Column 21, lines 1-4)]

“defining an access order for said pointers” [With respect to this limitation, Keele teaches a “tape directory” which “points to tape maps” (Column 40, line 38) and that the “tape map, stored for each virtual tape on the optical disk is used to keep track of where on the disks 20 each record is stored” (Column 41, lines 22-25) (Figure 1) and that “the system of pointers is loaded in memory of the controller so that search operations can be quickly executed” (Column 21, lines 9-11) as a definition of how the pointers will be accessed and used to access virtual volumes.]

13. As per claim 7, Keele discloses a “virtual tape stacker method” [See rejection to claim 4 above]

“wherein said ejecting step comprises the substep of:

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setting a load bit in one of said data management tables corresponding to said loaded one of said volumes to zero so as to indicate an empty status” **[With respect to this limitation, Keele discloses a process so that “When a disk is exported from the jukebox, the disk directory entries are deleted and the previously assigned slot is designated as free” (Columns 39-40 lines 62-65 and 1-4) as a way of indicating whether a certain space in memory is empty/full. The examiner interprets “the updating of the disk directory” used by Keele to be equivalent to “a load bit” as disclosed by Applicant since both encompass the same functionality of reporting whether a space on disk is empty/full. It is inherent that a disk directory contains bits indicating the availability of space.]**

14. As per claim 8, Keele discloses a “virtual tape stacker method” **[See rejection to claim 4 above]**

“wherein said loading step comprises the substeps of:

reading one of said pointers according to said access order and locating a next one of said data management tables according to said pointer” **[With respect to this limitation, Keele discloses that when a virtual tape is “mounted, the tape map is read and if it has been altered, is written onto the disk” and “the pointer to the tape map is recorded in the tape directory for each virtual tape” (Column 44, lines 48-52) as a way of accessing, reading and updating pointers every time a virtual volume is loaded on a disk.]**

“setting a next load bit in said next one of said data management tables to indicate said next sequential volume is full” **[With respect to this limitation,**

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Keele discloses a process so that when a disk is imported to the jukebox, “it is assigned to a free slot in the jukebox” and that “the disk directory is updated” to reflect the loading operation (Columns 39-40 lines 62-65 and 1-4) as a way of indicating that a disk space is full. The examiner interprets “the updating to the disk directory” used by Keele to be equivalent to “a load bit” as described by Applicant since both encompass the same functionality of reporting whether a space on disk is empty/full. It is inherent that a disk directory contains bits indicating the availability of space.]

15. As per claim 9, Keele discloses a “virtual tape stacker method” [See rejection to claim 4 above]

“providing a physical tape volume loaded on a physical tape device” [With respect to this limitation, Keele discloses that “The function of the jukebox is to store disks in physical slots” (Column 29, lines 48-50). Keele further teaches this limitation as it is disclosed that the controller may have attached devices such as “3480 cartridge tape, 3420 reel tape, 2280 DASD” or other devices (Column 24, lines 13-15)]

“associating said physical tape volume as a next sequentially linked volume to one of said virtual tape volumes” [With respect to this limitation, Keele teaches that “the function of the jukebox is to store disks in physical slots until the disks are requested by the operator or host, and then to mount or dismount the disks into the optical drives;” it is also taught that “the controller assures that each optical disk appears to the host as a collection

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of one or more virtual tapes.” (Column 29, lines 47-60) because “each optical disk contains one or more virtual tapes” (Column 40, lines 5-6) and that the optical disk is made of sectors which “can be written and read sequentially from the start of the optical disk through the end.” (Column 40, lines 64-67)]

16. As per **claim 10**, claim 10 encompasses the same scope of the invention as claim 9. Therefore, claim 10 is rejected for the same reasons as stated above with regard to claim 9.

17. As per **claim 11**, Keele discloses “a virtual tape stacker” defined as [**“an optical disk system and method for emulating a set of magnetic tape drives using virtual tape data stored on optical disks”**](Column 17, lines 60-64)]
“comprising:”

“a plurality of virtual tape volumes configured for storing sequential data on a random access data storage device” [**With respect to this limitation, Keele discloses that “the emulation process stores virtual tapes on the optical disks” and also that “the sequential nature of the optical disk provides a good emulation of tape activity. This is because successive records are written sequentially on tape.” (Column 41, lines 2-5) and explains that the sectors of the optical disk “can be written and read sequentially from the start of the optical disk through to the end.” (Column 40, lines 65-67)]**

“a volume management table indicating a sequential order for said virtual tape volumes and a loaded one of said volumes” [**With respect to this limitation, Keele discloses that “the tape map, stored for each virtual tape on the**

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optical disk, is used to keep track of where on the disks each record is stored” (Column 41, lines 18-21)]

“a virtual tape manager adapted to transfer data between said loaded volume and an application program” [**“MOST has an advanced controller capable of data streaming” (Column 19, lines 57-58) “The emulation process stores virtual tapes on the optical disks” (Column 20, lines 33-34) “the emulation provides an optical attachment requiring no new operator skills, system programming, or modifications to existing software” (Column 18, lines 62-63). Keele also discloses that “Mount Messages sent by the attached host computer 12 to MOST 10 are automatically interpreted and acted” (Figure 1, Column 36, lines 31-32). It is inherent that in order for a host computer to send messages, it must have an application program with one or more instructions readable and executable by a processor and also have a medium to transfer data.]**

18. As per claim 12, Keele discloses a “virtual tape stacker” [**See rejection to claim 11 above]**

“wherein said volume management table comprises a plurality of pointers associated with said virtual tape volumes” [**This limitation is disclosed by Keele as it is taught that the “tape directory listing the virtual tapes has pointer to the respective tape maps.” (Column 21, lines 1-4)]**

“said sequential order determined by a predetermined access order of said pointers” [**With respect to this limitation, Keele teaches a “tape directory” which “points to tape maps” (Column 40, line 38) and that the “tape map,**

stored for each virtual tape on the optical disk is used to keep track of where on the disks 20 each record is stored” (Column 41, lines 22-25) (Figure 1). Keele also teaches, “each optical disk contains one or more virtual tapes” (Column 40, lines 5-6), that the optical disk is made of sectors which “can be written and read sequentially from the start of the optical disk through the end.” (Column 40, lines 64-67) and that “the system of pointers is loaded in memory of the controller so that search operations can be quickly executed” (Column 10, lines 9-11) as a definition of how pointers will be accessed and used to access virtual volumes.]

19. As per claim 13, Keele discloses a “virtual tape stacker” [See rejection to claim 11 above]

“wherein said virtual tape manager is responsive to an unload command from said application program so as to eject said loaded volume and load a next sequential one of said volumes” [With respect to this limitation, Keele teaches that “The jukebox is designed to perform two robotically controlled operations concurrently. That is, one drive can be unloaded at the same time the other drive is being loaded” (Column 36, lines 23-26). Keele also discloses that “Mount Messages sent by the attached host computer 12 to MOST 10 are automatically interpreted and acted” (Figure 1, Column 36, lines 31-32). It is inherent that in order for a host computer to send messages, it must have an application program with one or more instructions readable and executable by a processor.]

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20. As per **claim 15**, Keele discloses a “virtual tape stacker” **[See rejection to claim 11 above]**

“wherein said physical tape volume corresponds to a write-protected tape cartridge” **[Keele explains that the data can write-protected using a “media cartridge write protect switch, and by a virtual write protect indicator which can be recorded in each individual virtual tape” (Column 38, lines 18-23)]**

VII. RELEVANT ART CITED BY THE EXAMINER

21. The following prior art made of record and not relied upon is cited to establish the level of skill in the applicant’s art and those arts considered reasonably pertinent to applicant’s disclosure. See **MPEP 707.05(c)**.

22. The following references teach tape emulation systems that use a virtual tape method/system.

U.S. PATENT NUMBER

6,834,324

5,438,674

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6,557,073

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6,496,791

2004/0181388

VIII. CLOSING COMMENTS

Conclusion

a. STATUS OF CLAIMS IN THE APPLICATION

23. The following is a summary of the treatment and status of all claims in the application as recommended by M.P.E.P. 707.07(i):

a(1) SUBJECT MATTER CONSIDERED ALLOWABLE

24. Per the instant office action, claim 14 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The primary reasons for allowance of claim 14 in the instant application is the combination with the inclusion in these claims of the limitation of a virtual tape stacker comprising "**a physical tape volume, wherein a last one of said virtual tape volumes is previous to said physical tape volume in said sequential order and a first one of said virtual tape volumes is next from said physical tape volume in said sequential order.**" The prior art of record including the disclosures under section **VII** above neither anticipates nor renders obvious the above recited combination.

a(2) CLAIMS REJECTED IN THE APPLICATION

25. Per the instant office action, claims 1-13 and 15 have received a first action on the merits and are subject of a first action non-final.

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b. DIRECTION OF FUTURE CORRESPONDENCES

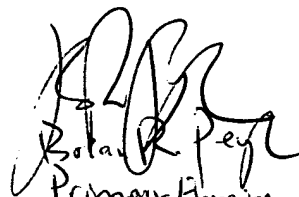
26. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yaima Campos whose telephone number is (571) 272-1232. The examiner can normally be reached on Monday to Friday 8:00 AM to 4:30 PM.

IMPORTANT NOTE

27. If attempts to reach the above noted Examiner by telephone are unsuccessful, the Examiner's supervisor, Mr. Donald Sparks, can be reached at the following telephone number: Area Code (571) 272-4201.

The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

October 27, 2005


Yaima Campos
Primary Examiner
Art Unit 2185
10/27/05

Yaima Campos
Examiner
Art Unit 2185

YC